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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,222	12/20/2001	Hashem Akhavan-Tafti	Lum. 4.1-77	3442

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EXAMINER

HUANG, EVELYN MEI

ART UNIT	PAPER NUMBER
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1625

DATE MAILED: 01/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/029,222

Applicant(s)

AKHAVAN-TAFTI ET AL.

Examiner

Evelyn Huang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10-19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/29/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

### DETAILED ACTION

1. Claims 1-19 are pending.

#### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1,

- Definition of R1 and R2,
  - Since no clear definition of the substituents is given except some examples, and 'without limitation', is recited thereafter (page 13, lines 25-28), it is unclear what are the substituents of the 'substituted' alkyl, aryl, aralkyl other than the recited examples.
  - It is unclear what 'ring' is formed when 'R1 and R2 can be joined together to form a ring'. Monocyclic, polycyclic? What size? Any additional hetero atoms in the ring? If so, how many? Although preferred ring size from 5-7 atoms has been described on page 14, a clear definition is not found in the specification.
- Definition of R4-R11, what is 'a substituent which can contain from 1 to 50 atoms selected from C, H, N, O, S, P, Si and halogen'? Such a description includes numerous classes of chemical compounds with diverse structures, including those not yet identified. A clear definition is not found in the specification although some examples are given on page 15, which only recites '...can include, without

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*limitation'* and then the preferred examples. Furthermore, these groups may be substituted, and the substituents are not defined.

The metes and bounds of these substituents on the acridine ring have not been set and they are therefore indefinite.

The rejection is applicable to the claims dependent on claim 1.

***Claim Rejections - 35 USC § 112(1)***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention as claimed. The specification is enabling only for the compounds of claims 10-19.

a. *Nature of the invention.*

The instant invention is drawn to a chemiluminescent ketene dithioacetal compound of formula I.

b. *State of the prior art and the level of the skill in the art.*

A benzodithio-2-ylidene acridine compound within the scope of the instant has been described by Akiba. However, a use as recited in the instant has not been described.

The level of the skill in the chemiluminescent art is high.

c. *Degree of predictability/unpredictability.*

As with most chemical cases, chemiluminescence art is quite unpredictable. Structurally similar compounds may have different physical properties as reflected in emission spectrum, duration of light emission, enzyme turnover, hydrophobicity/hydrophilicity and solubility.

d. *Amount of guidance/ working examples.*

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The preparation of compounds of formula I is limited to compounds wherein R4-R11 are hydrogen or only R6 is substituted with methoxy. An example of R1 and R2 together with the two sulfur atoms to which they attached form a 6-membered ring has also been described.

The instant claims, however, encompass numerous compounds whose structures are not fully described (see paragraph 2 above). Starting materials and the processes of making these compounds not described in the specification are not seen but required. Sources are particularly pertinent especially when the structures of these compounds are not fully defined. Absent sources, the public is offered mere language, rather than enablement. Ex parte Moersch 104 USPQ 122. In re Howarthe 210 USPQ 689.

e. *Breadth of the claims.*

Applicant's assertion that all the structurally diverse compounds embraced in the instant claims (including those compounds whose structures are not fully described) would produce chemiluminescence does not commensurate with the scope of the objective enablement, especially in view of the high degree of unpredictability in the art (paragraph c, d above).

f. *Quantitation of undue experimentation.*

Since insufficient teaching and guidance have been provided in the specification (paragraphs b-e above), one of ordinary skill in the art, even with high level of skill, would not be able to make and/or use all the compounds as claimed without undue experimentation except for the compounds of claims 10-19.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

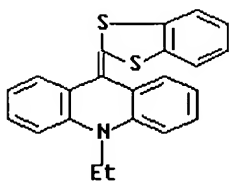
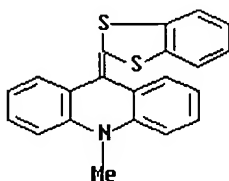
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1, 3, 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Akiba .

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The following compounds of Akiba (page 2677, Table 3, compounds 6c, 6d) are encompassed by the instant claims.



***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being obvious over Akhavan-Tafti (6126870).

Akhavan-Tafti generically discloses a chemiluminescent acridine compound of formula I (column 6), which embraces the instant. Specific compounds are described (column 18, Table, compounds 7-13).

The prior art compound differs from the instant in having an O instead of the instant S on the ketene carbon.

*man Ta*

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Akhavan-Tafti, however, teaches that O and S are optional choices (column 6, lines 13-14). The method of preparing the compound where both Z groups are S as recited in the instant is described on column 15, lines 3-38.

At the time of the invention, one of ordinary skill in the art would be motivated to replace the O of the prior art example compound with the alternative S as taught by Akhavan-Tafti to arrive at the instant invention with the reasonable expectation of obtaining an additional chemiluminescent compound.

### ***Double Patenting***

6. The nonstatutory double patenting rejection is based on a judicially created doctrine ground\*ed in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of copending Application No. 10/205050. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending compounds wherein R1 and R2 joined together by a substituted alkylene chain to form a ring of 5-30 atoms, especially the specific compounds of copending claims 10, 11, are species encompassed by the instant claims wherein R1 and R2 form a ring.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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*Allowable Subject Matter*

7. Claims 10-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

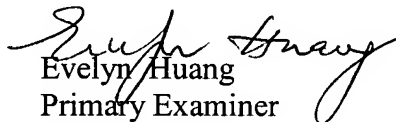
Akiba's compound (see paragraph 4 above) has a benzene fused to a 5-membered dithiol ring whereas the instant compound of claim 10 (first compound of the second row) is a monocyclic 6-membered dithiol ring. Motivation to modify Akiba's compound to arrive at the instant is lacking.

Although Akhavan-Tafti generically discloses the instant (see paragraph 5 above), the instant has an alkyl or substituted alkyl attached to both of the thiols. Motivation to modify the prior art example compounds via multiple changes to arrive at the instant is lacking.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evelyn Huang whose telephone number is 703-305-7247. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alan Rotman can be reached on 703-308-4698. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4556 for regular communications and 703-308-4556 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1235.

  
Evelyn Huang  
Primary Examiner  
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